

DISSERTATION PROPOSAL

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“AI in Digital Markets: Causal Perspectives on Policy, Behavior and Decision-Making”

Friday, December 6, 2024
4:00pm
Tepper 4219

Chapter 1:

The first chapter empirically investigates the causal impact of avatar gender and race on transaction prices within the Non-Fungible Token (NFT) marketplace. The impetus behind this investigation is grounded in the observation that NFT investors frequently represent a younger, wealthier, and politically progressive demographic, which raises the question of whether this marketplace is less susceptible to prejudice and social bias. Contrary to such expectations, our analysis reveals pronounced gender and racial disparities in NFT prices. Specifically, female CryptoPunks avatars are transacted at a 36.8% lower price compared to their male counterparts (i.e., avatars with similar image attributes), while black CryptoPunks avatars are transacted at a 30.7% lower price compared to their white counterparts. We further identify that avatar features linked to high-tech or higher education attributes (e.g., 3D glasses, Virtual Reality glasses, Nerd glasses) can effectively counter these disparities. We verify the causal patterns revealed in the NFT dataset with a controlled experiment, where NFT buyers are randomly shown the comparable avatars that exhibit variations in race or gender, enabling us to evaluate the impact of these attributes on buyer choices and willingness-to-pay. The experiment confirms the gender (male) and race (white) price premium in the NFT market and suggests that buyers exhibit a preference for NFT avatars resembling their personal identity. We offer insights into policy strategies aimed at promoting racial and gender equity within the NFT marketplace.

Chapter 2:

Live streaming on platforms such as TikTok and Douyu.com has surged in popularity. These live-streaming influencers often engage in the self-disclosure of their private or intimate details to garner engagement. This chapter empirically examines the impact of regulations penalizing self-disclosure behavior using data from Douyu.com and TikTok. First, utilizing multimodal video analytics, we demonstrate that self-disclosure is associated with higher audience engagement. Second, we establish the causal impact of policy on the decrease in live-stream engagement. The effect is heterogeneous and is more pronounced in the “stylish” content category. Interestingly, a segment of influencers generating “stylish” content responded to the policy by switching to “non-stylish” content, thereby garnering increased engagement compared to before. This raises the question of whether privacy regulation necessarily has a negative impact on all influencers and the platform. We provide a stylized theoretical model to explain the empirical findings and capture the economic implications for heterogeneous influencers and the platform.

Chapter 3:

Generative Artificial Intelligence (Gen-AI) is currently at the peak of its hype cycle, with growing confidence in its potential to enhance high-stakes decision-making. This study focuses on housing decisions, which significantly impact long-term household wealth and are approached with considerable caution. We investigate how Large Language Model (LLM) assistants, such as ChatGPT, influence individuals' considerations in housing evaluations and assess whether LLM-assisted human decision-making can outperform traditional machine learning (ML) models. Additionally, we explore the development of learning and trust dynamics through interactions with ChatGPT. We estimate the causal effects through controlled experiments.

Proposed Committee: Kannan Srinivasan (Co-Chair), Yan Huang (Co-Chair), Susan Athey, Zoey Jiang, Xiao Liu, Shunyu Zhang

Proposal Documents:

<https://drive.google.com/drive/folders/1nY65VRLSRtPRJpQvXKWNxBW03Weq9wW?usp=sharing>